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*Science and Technology for Tomorrow's Aerospace Forces*

## **Success Story**

### **INSTRUMENTED REUSABLE BLAST PAD PROVIDES RELIABLE DATA**



The Munitions Directorate, located at Eglin Air Force Base, Florida, completed the design, fabrication, and assembly of a unique, highly instrumented, reusable blast pad. Innovative features incorporated in the blast pad allow directorate engineers to obtain blast pressure measurements reliably in blast environments characterized by high-intensity pressure loads and severe fragmentation. Munitions engineers need these measurements to develop explosive source models more representative of realistic Air Force munitions, a critical aspect of simulation tools used for warhead designs of the future.



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### **Accomplishment**

The data from blast pad experiments will provide more accurate explosive source models to Air Force simulation tools. As a direct result, directorate engineers will perform Air Force simulations of concept and inventory munitions with explosive source models that place more accurate blast loads on targets. Engineers will perform concept evaluations, analyses of alternatives, and other studies of munitions effectiveness with greater confidence of predicted structural damage.

The instrumented blast pad will also support other explosive and warhead development efforts at the directorate. By locating the blast pad, the directorate capitalized on the existing range infrastructure and workforce. The directorate continues its munitions development cost reduction pursuits by improving the ability to simulate innovative warhead designs instead of relying on expensive full-scale experiments.

### **Background**

Directorate personnel conceptualized a new and innovative experimental approach for characterizing the blast output of realistic munitions by constructing a special blast pad that incorporated features needed for cased explosive charges, yet closely approximated a classic hemispherical surface burst experiment. This apparatus, referred to as the instrumented blast pad, consists of a 140 ft by 80 ft by 8 in. thick concrete slab with a specially designed replaceable detonation area.

Directorate engineers can reliably measure blast pressures and arrival times regardless of the nature of the explosive source tested. Experiments with the instrumented blast pad should provide detailed characterization of the blast environment from realistic cased charges (e.g., munitions or warheads) without the analysis problems posed by traditional arena tests.

### **Additional information**

To receive more information about this or other activities in the Air Force Research Laboratory, contact TECH CONNECT, AFRL/XPTT, (800) 203-6451 and you will be directed to the appropriate laboratory expert. (01-MN-06)